

AMENDMENTS TO THE DRAWINGS

Amendments have been made to the drawings to correct informalities, typographical errors and delete extraneous text, and were not necessitated to overcome any prior art.

Amendments are shown to Figs 13, 19, 24B, 24C, 39, 41, 44, 45A, 62A, 62B, 65, 66, 67, 68, 70, 71, 72, 73, 74, 75, 76, 77, 78, 84, 85, 86, 87, 88, 94, 95, 98, 99, 100, and 101 on the 33 attached Annotated Sheets Showing Changes. No new matter has been introduced by these amendments.

The attached 158 sheets of Replacement Drawings include changes to the figures to comply with 37 CFR 1.84 and replace the drawing sheets as originally filed. Several drawings as originally filed have been divided into two or more sheets in the Replacement Drawings to comply with 37 CFR 1.84. Several drawings were renumbered in the Description of Drawings in the Preliminary Amendment submitted upon filing, July 6, 1999. To avoid confusion and for the convenience of the Office, the figure/sheet correlations are shown in the following table:

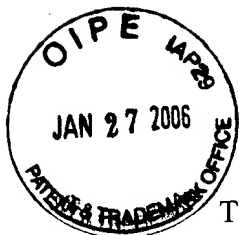
Originally Filed Fig(s). No:	Replaced as Fig(s). No.:	Replacement Sheet No.:
1	1	1
2	2	2
3	3A	3
	3B	4
4	4A	5
	4B	6
5	5	7
6	6A	8
	6B	9
7	7A	10
	7B	11
8	8A	12
	8B	13
	8C	14
9	9A	15
	9B	16
	9C	17
10	10A	18
	10B	19
	10C	20
11	11	21
12	12	21
13	13	22
14	14A	23
14a	14B	23

Originally Filed Fig(s). No:	Replaced as Fig(s). No.:	Replacement Sheet No.:
15	15	24
16	16A	24
16a	16B	25
16b	16C	26
17	17	27
18	18	28
19	19	28
20	20	28
21	21	29
22	22	30
23	23A	31
	23B	32
24	24A	33
25	25	33
24a	24B-1	34
24a	24B-2	35
24b	24C-1	36
	24C-2	37
24c	24D-1	38
	24D-2	39
	24D-3	40
	24D-4	41
26	26A	42
	26B	43
27	27	44
28	28A	45
	28B	46
	28C	47
29	29	48
30	30	49
31	31	50
32	32	50
33	33	50
34a	34A	51
34b	34B	51
34c	34C	51
35	35	52
36	36	52
37	37	53
38	38	54
39	39A	55
	39B	56
40	40	57
41	41A	58
	41B	58
42	42	59
43	43	59

Originally Filed Fig(s). No:	Replaced as Fig(s). No.:	Replacement Sheet No.:
44	44	60
45	45A	61
45a	45B-1	62
	45B-2	63
46	46	57
47	47	64
48	48	65
49	49A	66
49a	49B	67
50	50	68
51	51	69
52	52	69
53a	53A	70
53b	53B	70
53c	53C	71
53d	53D	71
53e	53E	72
53f	53F	72
54	54	73
55	55	74
56	56	75
57	57	76
58	58	77
59	59	78
60	60	79
61	61	79
62a	62A	80
62b	62B	81
63	63A	82
	63B	83
64	64	84
65	65	85
66	66	86
67	67	87
68	68	88
69	69	89
70	70	90
71	71	91
72	72	92
73	73	93
74	74	94
75	75	95
76	76	96
77	77	97
78	78	98
79	79	99
80	80	100

Originally Filed Fig(s). No:	Replaced as Fig(s). No.:	Replacement Sheet No.:
81	81	101
82	82	102
83	83	103
84	84	104
85	85	105
86	86	106
87	87	107
88	88	108
89	89	109
90	90	110
91	91	110
92	92	111
93	93	112
94	94	113
95	95	113
96	96	114
97	97	115
98	98	115
99	99	116
100	100	117
101	101	117
102	102	118
103	103	119
104a	104A	120
104b	104B	120
104c	104C	121
104d	104D	121
104e	104E	122
104f	104F	122
105a	105A	123
105b	105B	123
105c	105C	124
105d	105D	124
105e	105E	125
106a	106A	126
106b	106B	126
107	107A	127
	107B	128
	107C	129
108a	108A-1	130
	108A-2	131
108b	108B-1	132
	108B-2	133
	108-B-3	134
109	109A	135
	109B	136
	109C	137

Originally Filed Fig(s). No:	Replaced as Fig(s). No.:	Replacement Sheet No.:
110	110A	138
	110B	139
111	111	140
112	112	141
113	113	142
114a	114A-1	143
	114-A-2	144
114b	114B	144
115	115	145
116	116A	146
	116B	147
117	117A	148
	117B	149
	117C	150
	117D	151
118	118	152
119	119	153
120	120A	154
	120B	155
	120C	156
	120D	157
Prior Art A	121	158
Prior Art B	122	158

REMARKS

This paper is responsive to the Notice Regarding Drawings dated January 6, 2006.

Applicant submits Replacement Drawings herewith to correct informalities and comport with the requirements of 37 CFR 1.84.

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that, on the date shown below, this correspondence is being

- ☒ deposited with the US Postal Service with sufficient postage as first class mail and addressed as shown above.
☐ facsimile transmitted to the US Patent and Trademark Office.

 1/23/06
Mark Zagorin Date

EXPRESS MAIL LABEL:

N/A

Respectfully submitted,



Mark Zagorin, Reg. No. 36,067
Attorney for Applicant(s)
(512) 338-6311 (direct)
(512) 338-6300 (main)
(512) 338-6301 (fax)

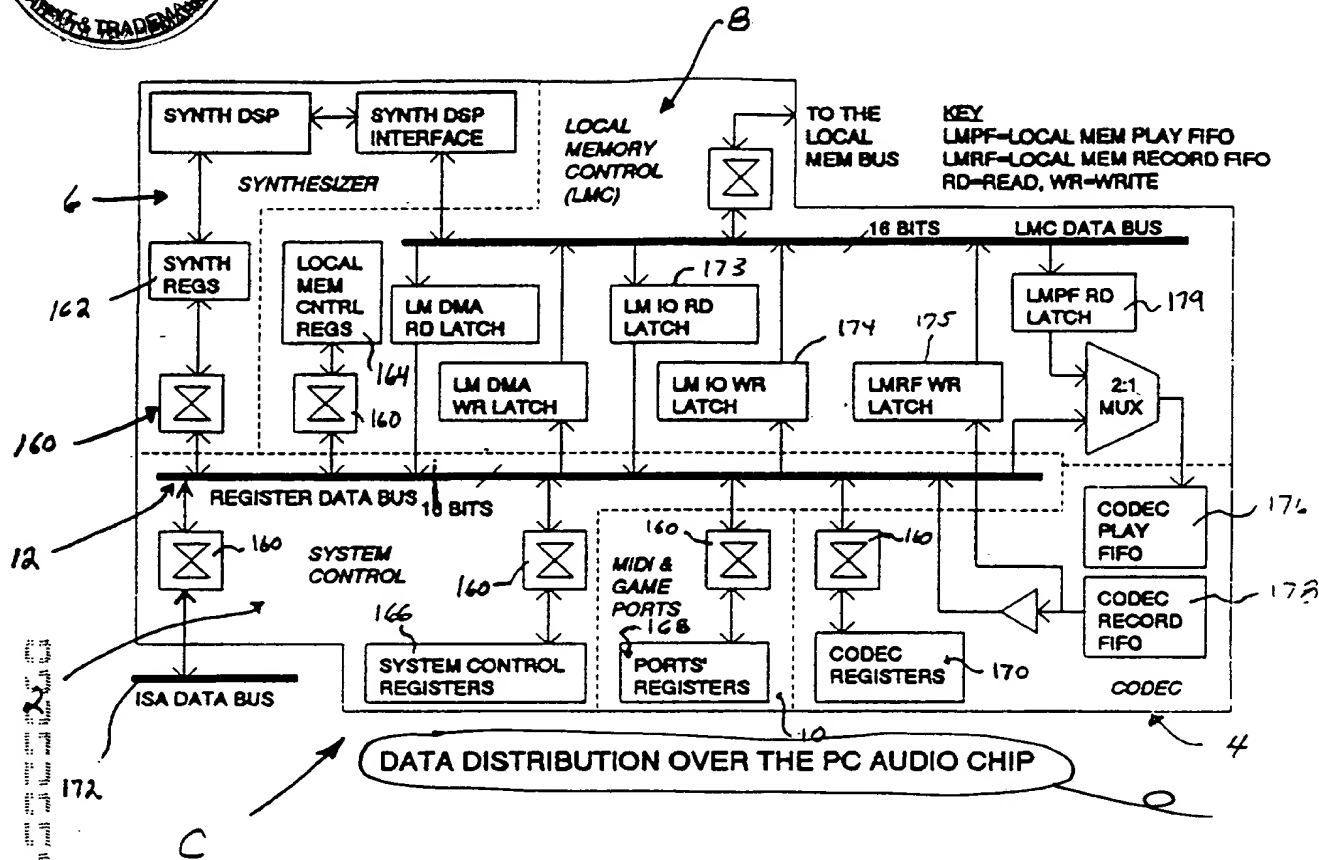


FIGURE 13

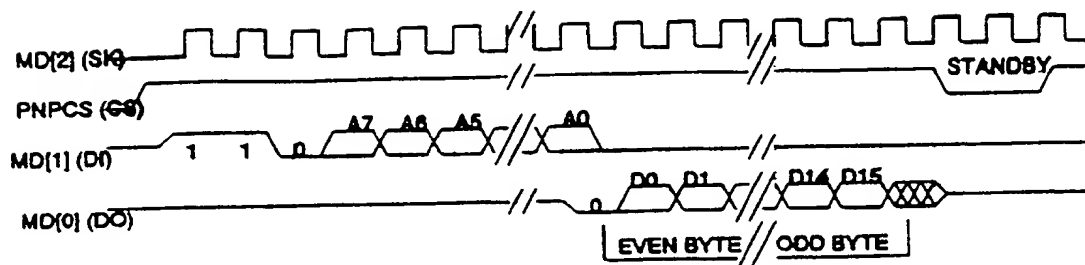


FIGURE 18

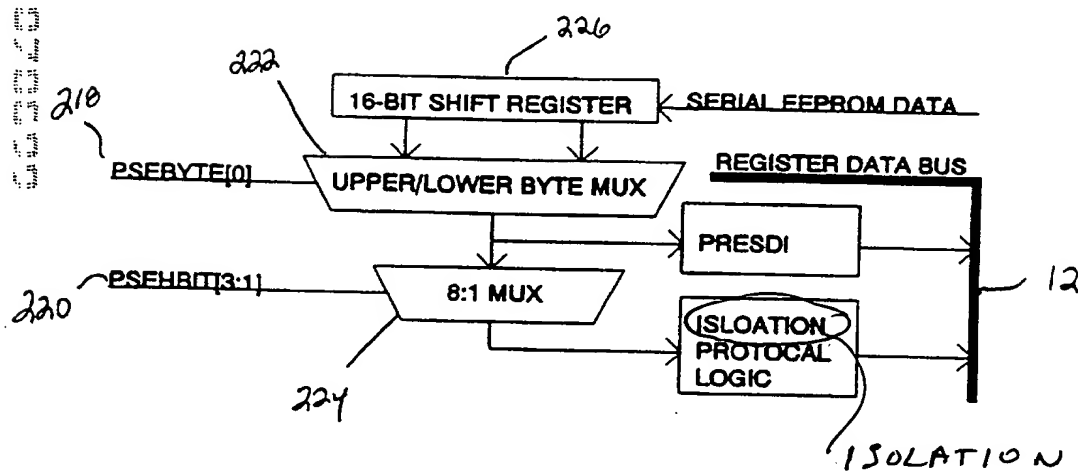


FIGURE 19


```

graph TD
    Start(( )) --> R1{Has Reset been activated?}
    R1 -- No --> R2{Has PCCI been activated?}
    R1 -- Yes --> R3{Is SUSPEND# activated?}
    R2 -- No --> R3
    R2 -- Yes --> R4{Are all of the PWM 6:1 bits low?}
    
    R3 -- No --> R4
    R3 -- Yes --> W1[/Wait for 80 μsecs./]
    W1 --> F1{Finished?}
    F1 -- No --> A1[/1SUSPRQ# is activated/]
    A1 --> A2[/12LSUSPRQ and 12SSUSPRQ are activated/]
    F1 -- Yes --> R5{Are either of these inputs activated?}
    A2 --> R5
    
    R4 -- No --> R5
    R4 -- Yes --> R5
    
    R5 -- No --> R2
    R5 -- Yes --> G1[/Ground XTAL20 (16.9 mhz) and set Reset of D flip flop so that when SUSPEND# is deactivated, the oscillators will be re-enabled but the ICLK 16M will not toggle until it has successfully clocked 64K times (4 to 8 μsecs.)/]
    G1 --> R6{Is SUSPEND# deactivated?}
    R6 -- No --> R5
    R6 -- Yes --> C1[/Count 64K states/]
    C1 --> F2{Finished?}
    F2 -- No --> C1
    F2 -- Yes --> L1[/Yes: Logic begins to operate/]
    L1 --> Start
    
    R4 -- Yes --> R7{Are either of these inputs activated?}
    R7 -- No --> R2
    R7 -- Yes --> A3[/PCARST# becomes active and forces most memory functions - registers, latches, bits of RAM and flip-flops - into their default state. Also activate pins RAS# and ROMCS#/]
    A3 --> R8{Is PCARST# inactive?}
    R8 -- No --> R7
    R8 -- Yes --> L2[/Sequence through and clear all 32 voice-RAM blocks in the Synthesizer/]
    L2 --> Start
  
```

The flowchart illustrates the initialization sequence for the TMS320C25 DSP. It begins with a decision on whether the Reset has been activated. If not, it checks for PCCI activation. If either Reset or PCCI is active, it checks for the SUSPEND# signal. If SUSPEND# is active, the system waits for 80 μsecs and checks if the signal is finished. If not finished, it activates 1SUSPRQ# and then 12LSUSPRQ and 12SSUSPRQ. If finished, it checks if either of these inputs is activated. If not, it loops back to the PCCI check. If yes, it grounds XTAL20 (16.9 mhz) and sets the Reset of the D flip flop. It then checks if SUSPEND# is deactivated. If not, it loops back to the SUSPEND# check. If yes, it counts 64K states until finished, then logic begins to operate. If PCCI is active and SUSPEND# is not active, it checks if PCARST# is inactive. If yes, it sequences through and clears all 32 voice-RAM blocks in the Synthesizer. If no, it loops back to the PCARST# check.

Figure 24b

REGISTER CONTROLLED LOW-POWER MODE FLOWCHART

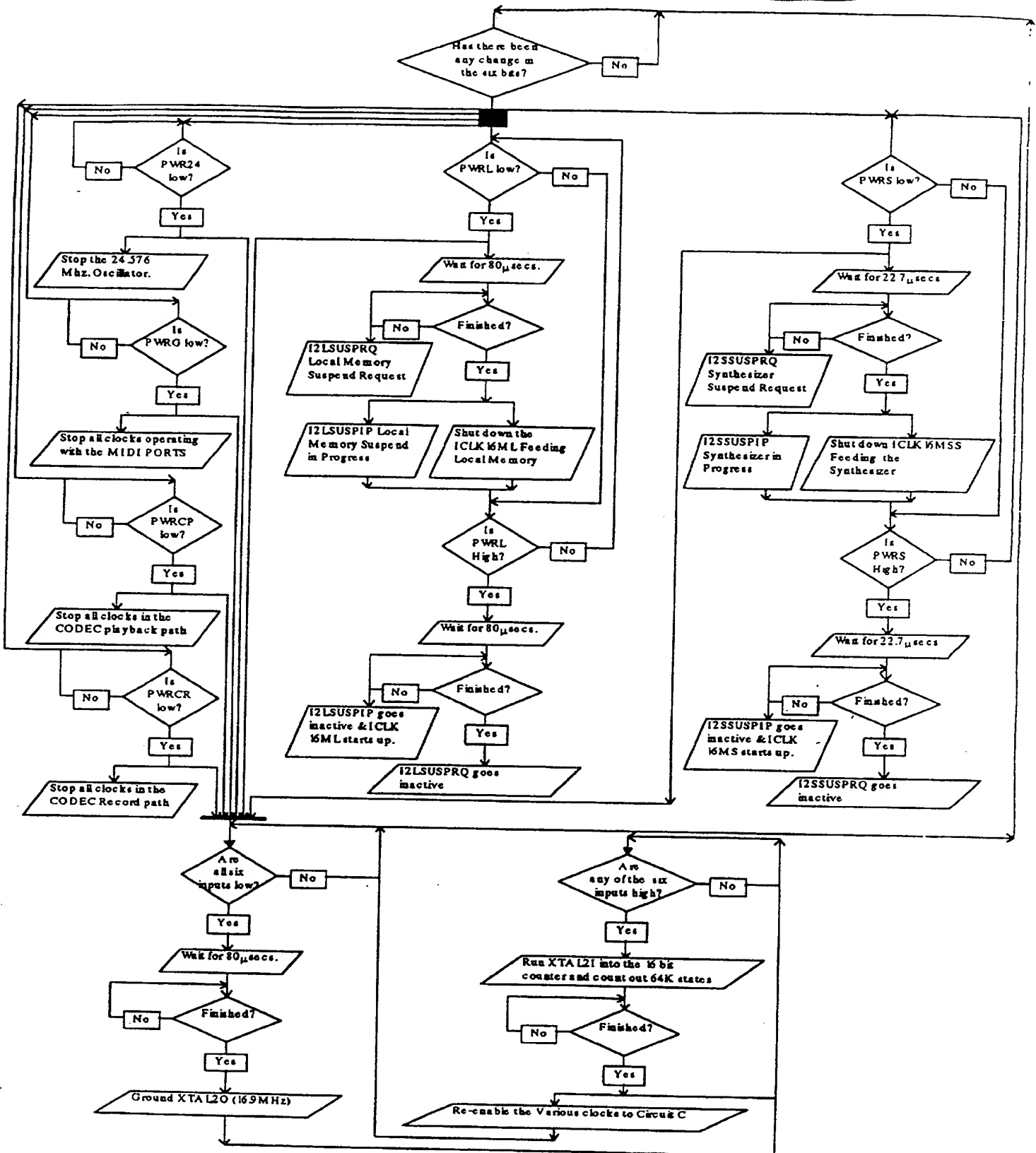


Figure 24c

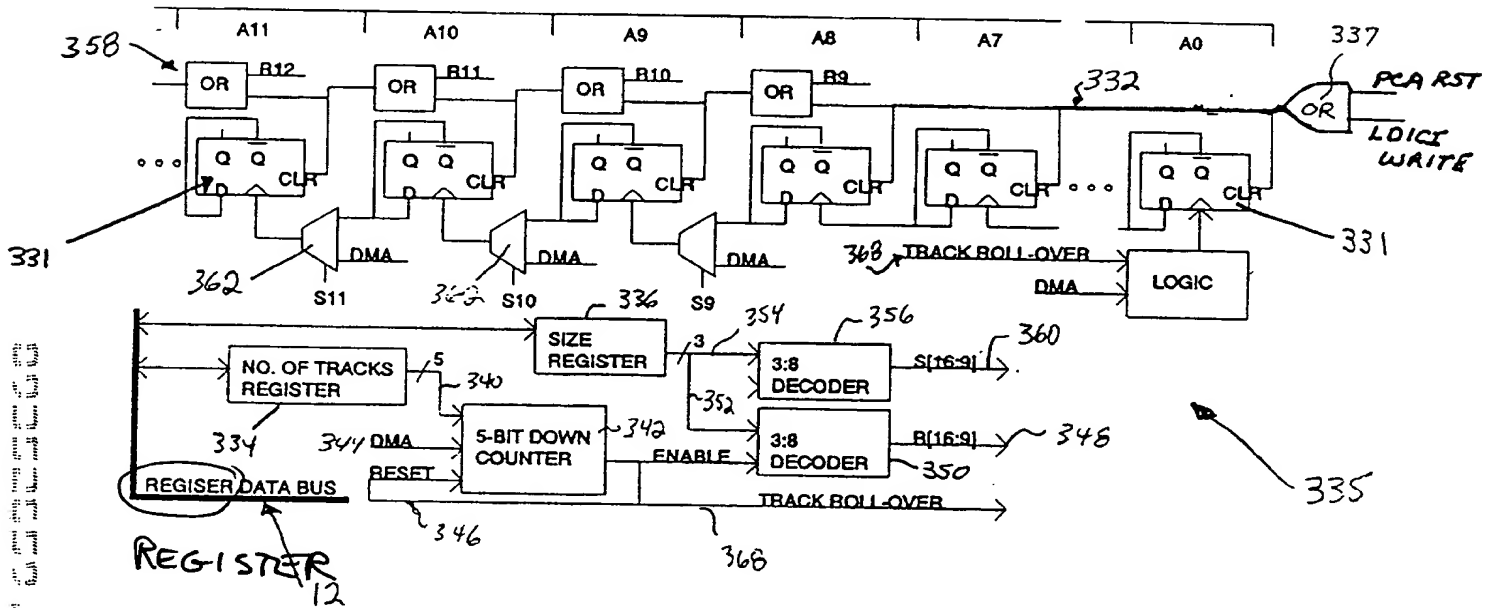
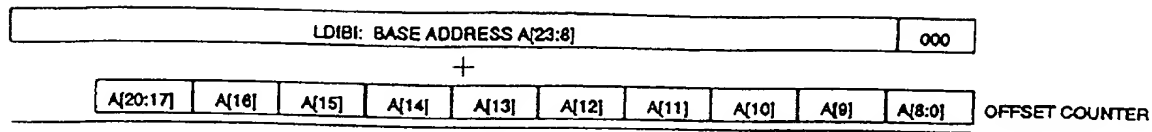


FIGURE 39



FIGURE 40

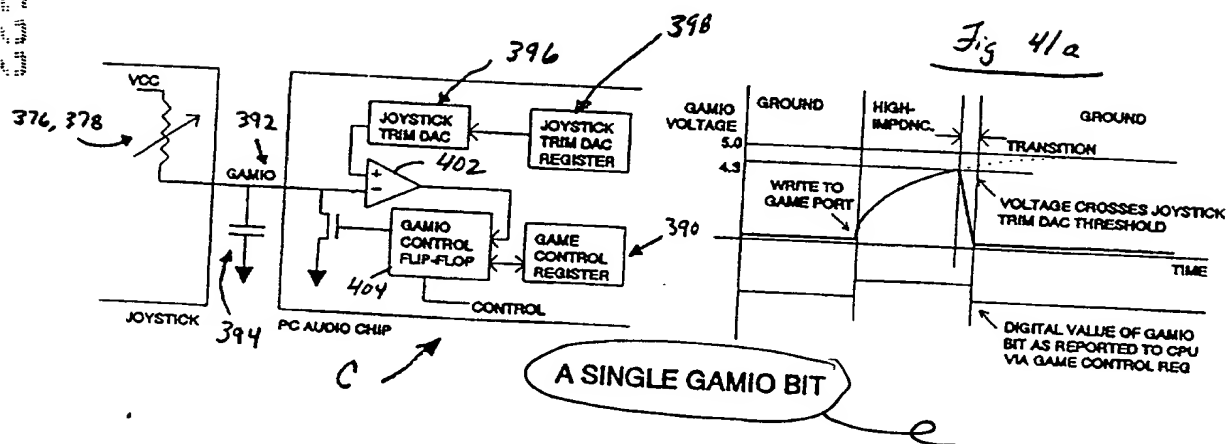


FIGURE 41

505
↓

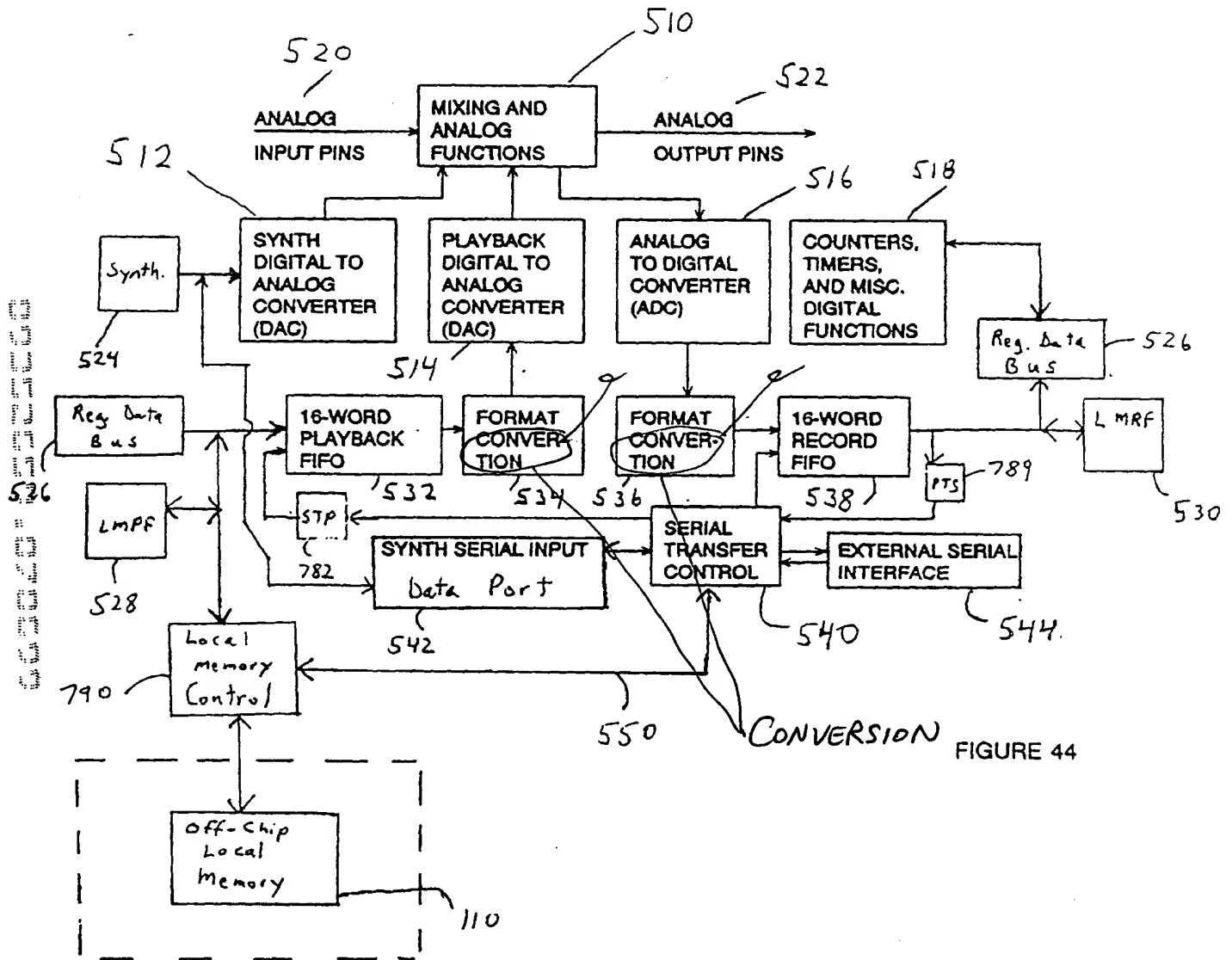


FIGURE 44

GAIN AND ATTENUATION VALUES

0 to +22.5dB (4-bit) gain table							
Value	dB	Value	dB	Value	dB	Value	dB
00h	00.0	04h	+06.0	08h	+12.0	0Ch	+18.0
01h	+01.5	05h	+07.5	09h	+13.5	0Dh	+19.5
02h	+03.0	06h	+09.0	0Ah	+15.0	0Eh	+21.0
03h	+04.5	07h	+10.5	0Bh	+16.5	0Fh	+22.5

0 to -45.0dB (4-bit) attenuation table							
Value	dB	Value	dB	Value	dB	Value	dB
00h	00.0	04h	-12.0	08h	-24.0	0Ch	-36.0
01h	-03.0	05h	-15.0	09h	-27.0	0Dh	-39.0
02h	-06.0	06h	-18.0	0Ah	-30.0	0Eh	-42.0
03h	-09.0	07h	-21.0	0Bh	-33.0	0Fh	-45.0

12 to -34.5dB (5-bit) gain-attenuation table							
Value	dB	Value	dB	Value	dB	Value	dB
00h	+12.0	08h	00.0	10h	-12.0	18h	-24.0
01h	+10.5	09h	-01.5	11h	-13.5	19h	-25.5
02h	+09.0	0Ah	-03.0	12h	-15.0	1Ah	-27.0
03h	+07.5	0Bh	-04.5	13h	-16.5	1Bh	-28.5
04h	+06.0	0Ch	-06.0	14h	-18.0	1Ch	-30.0
05h	+04.5	0Dh	-07.5	15h	-19.5	1Dh	-31.5
06h	+03.0	0Eh	-09.0	16h	-21.0	1Eh	-33.0
07h	+01.5	0Fh	-10.5	17h	-22.5	1Fh	-34.5

0 to -46.5dB (5-bit) attenuation table for CLOAI and CROAI							
Value	dB	Value	dB	Value	dB	Value	dB
00h	00.0	08h	-12.0	10h	-24.0	18h	-36.0
01h	-01.5	09h	-13.5	11h	-25.5	19h	-37.5
02h	-03.0	0Ah	-15.0	12h	-27.0	1Ah	-39.0
03h	-04.5	0Bh	-16.5	13h	-28.5	1Bh	-40.5
04h	-06.0	0Ch	-18.0	14h	-30.0	1Ch	-42.0
05h	-07.5	0Dh	-19.5	15h	-31.5	1Dh	-43.5
06h	-09.0	0Eh	-21.0	16h	-33.0	1Eh	-45.0
07h	-10.5	0Fh	-22.5	17h	-34.5	1Fh	-46.5

0 to -94.5dB (6 bit) attenuation table							
Value	dB	Value	dB	Value	dB	Value	dB
00h	00.0	10h	-24.0	20h	-48.0	30h	-72.0
01h	-01.5	11h	-25.5	21h	-49.5	31h	-73.5
02h	-03.0	12h	-27.0	22h	-51.0	32h	-75.0
03h	-04.5	13h	-28.5	23h	-52.5	33h	-76.5
04h	-06.0	14h	-30.0	24h	-54.0	34h	-78.0
05h	-07.5	15h	-31.5	25h	-55.5	35h	-79.5
06h	-09.0	16h	-33.0	26h	-57.0	36h	-81.0
07h	-10.5	17h	-34.5	27h	-58.5	37h	-82.5
08h	-12.0	18h	-36.0	28h	-60.0	38h	-84.0
09h	-13.5	19h	-37.5	29h	-61.5	39h	-85.5
0Ah	-15.0	1Ah	-39.0	2Ah	-63.0	3Ah	-87.0
0Bh	-16.5	1Bh	-40.5	2Bh	-64.5	3Bh	-88.5
0Ch	-18.0	1Ch	-42.0	2Ch	-66.0	3Ch	-90.0
0Dh	-19.5	1Dh	-43.5	2Dh	-67.5	3Dh	-91.5
0Eh	-21.0	1Eh	-45.0	2Eh	-69.0	3Eh	-93.0
0Fh	-22.5	1Fh	-46.5	2Fh	-70.5	3Fh	-94.5

FIGURE 45a

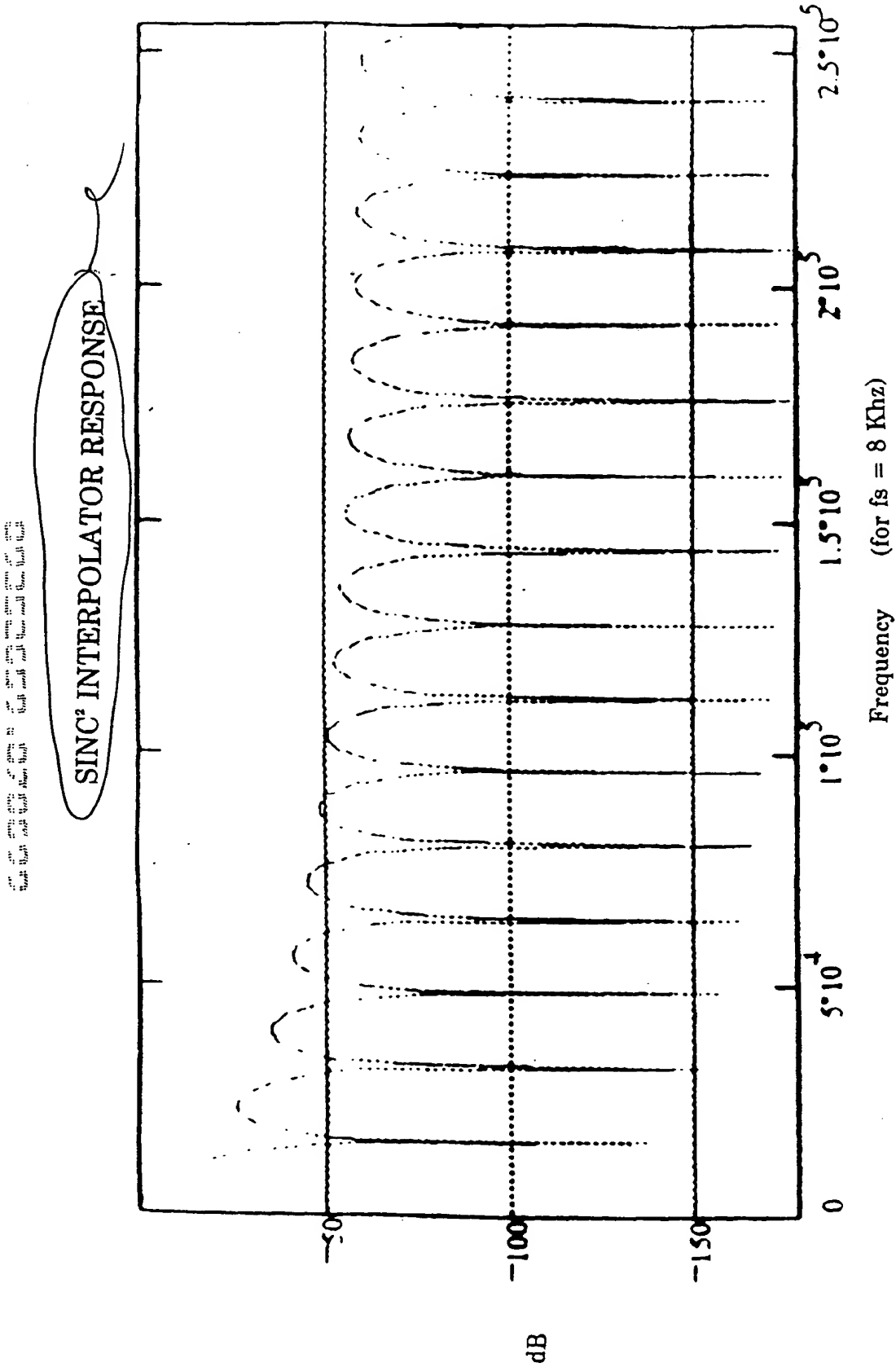


FIGURE 62a

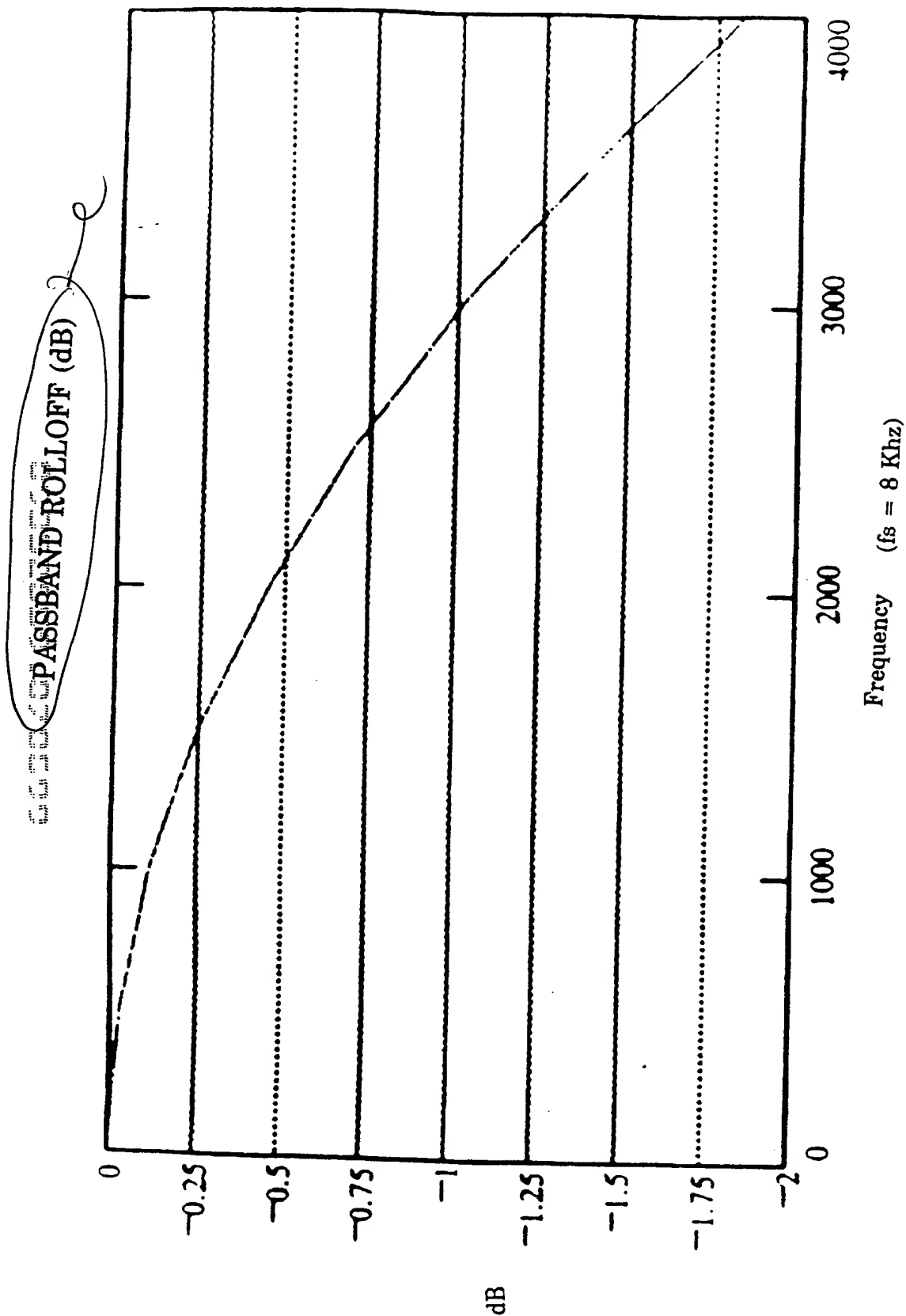


FIGURE 62b

Plot of poles and zeros in s plane (COMPLEX FREQ.)
IN CONTINUOUS TIME DOMAIN

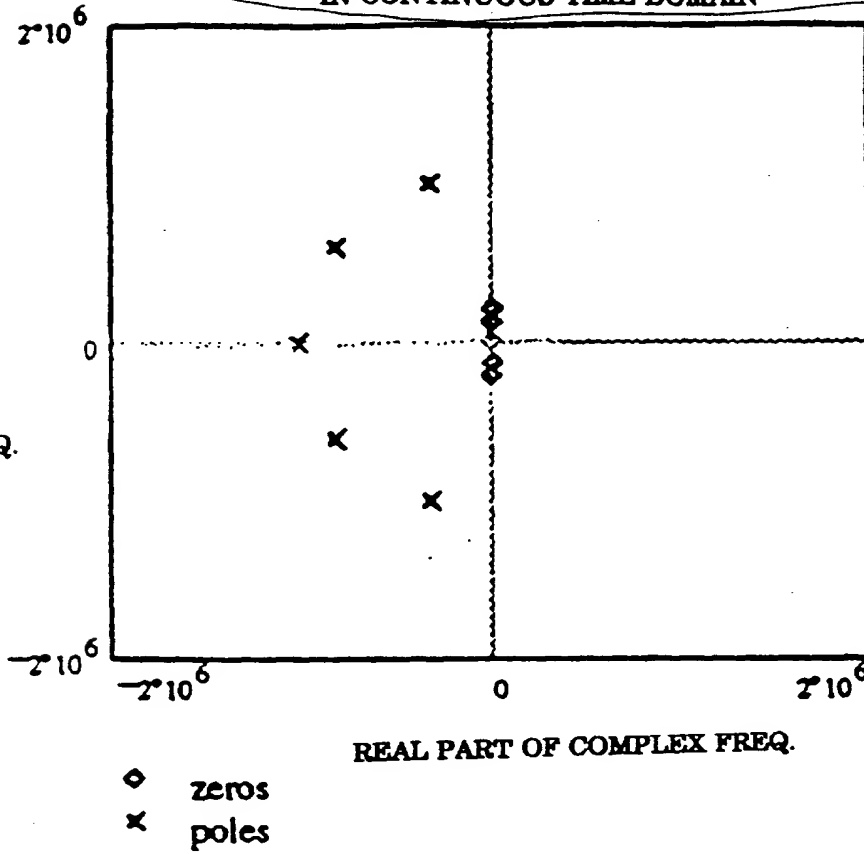


FIGURE 65

PLOT OF TRANSFER FUNCTION MAGNITUDE (CONTINUOUS
FREQUENCY DOMAIN)

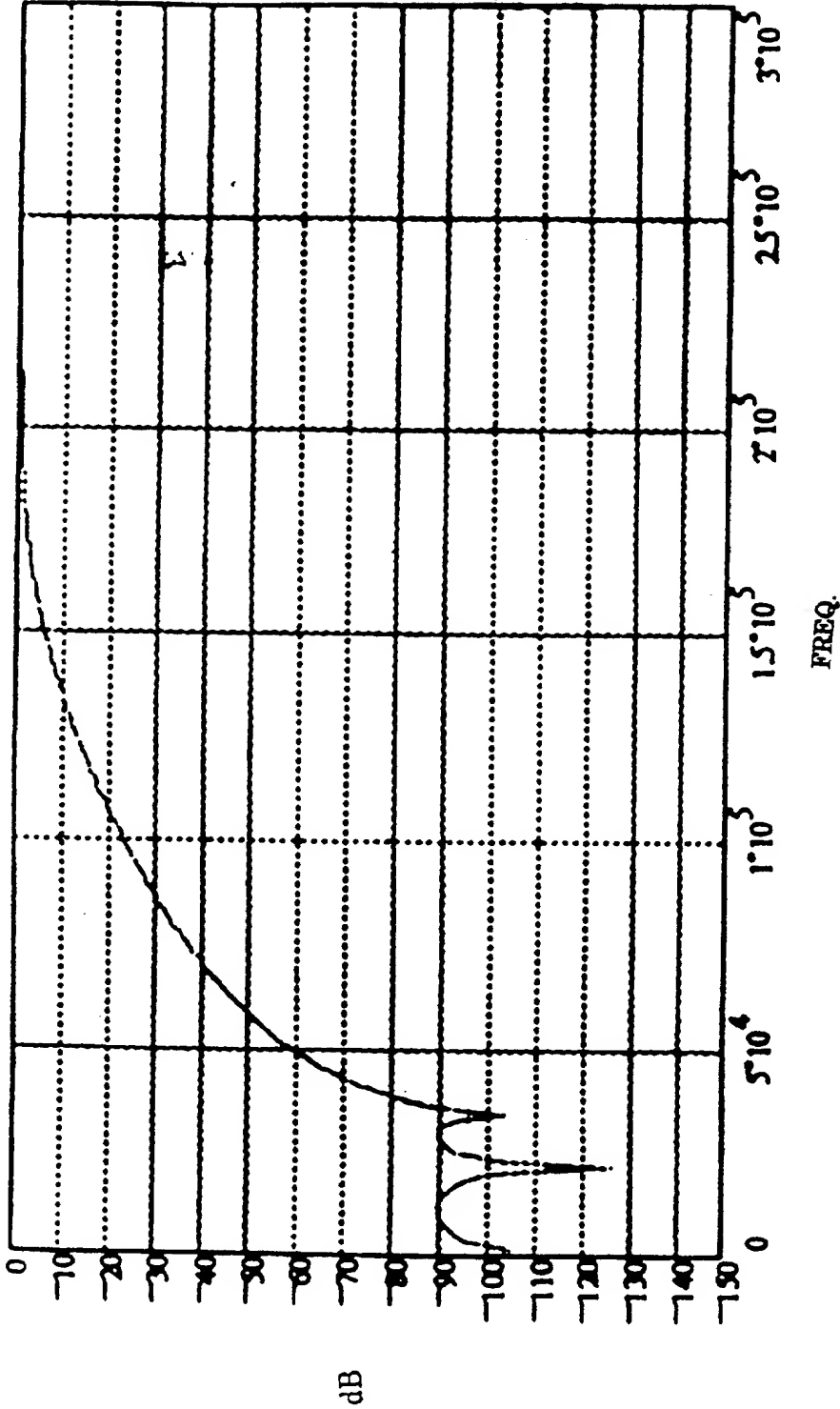
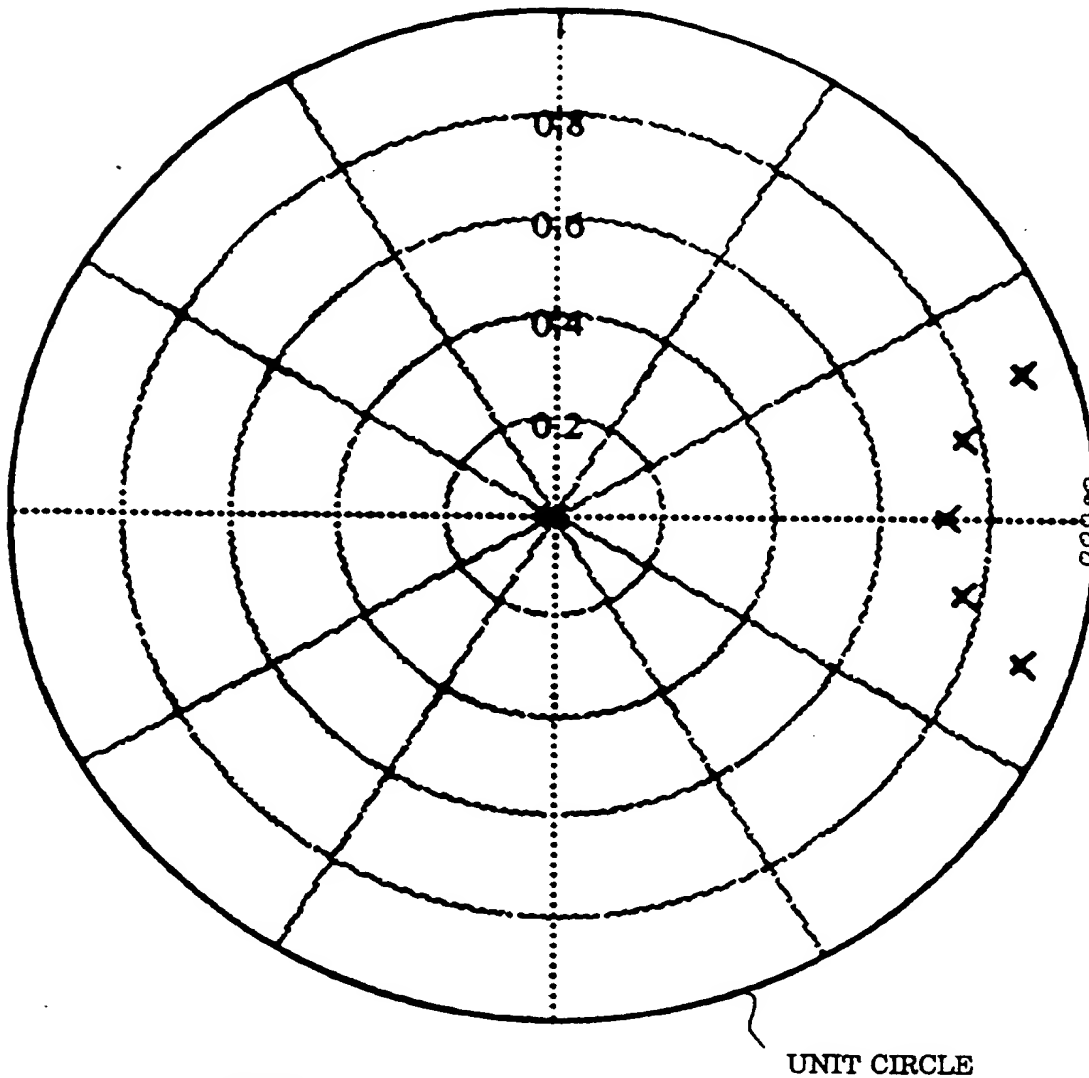


FIGURE 66

POLES AND ZEROS IN Z PLANE (DIGITAL FREQUENCY DOMAIN)



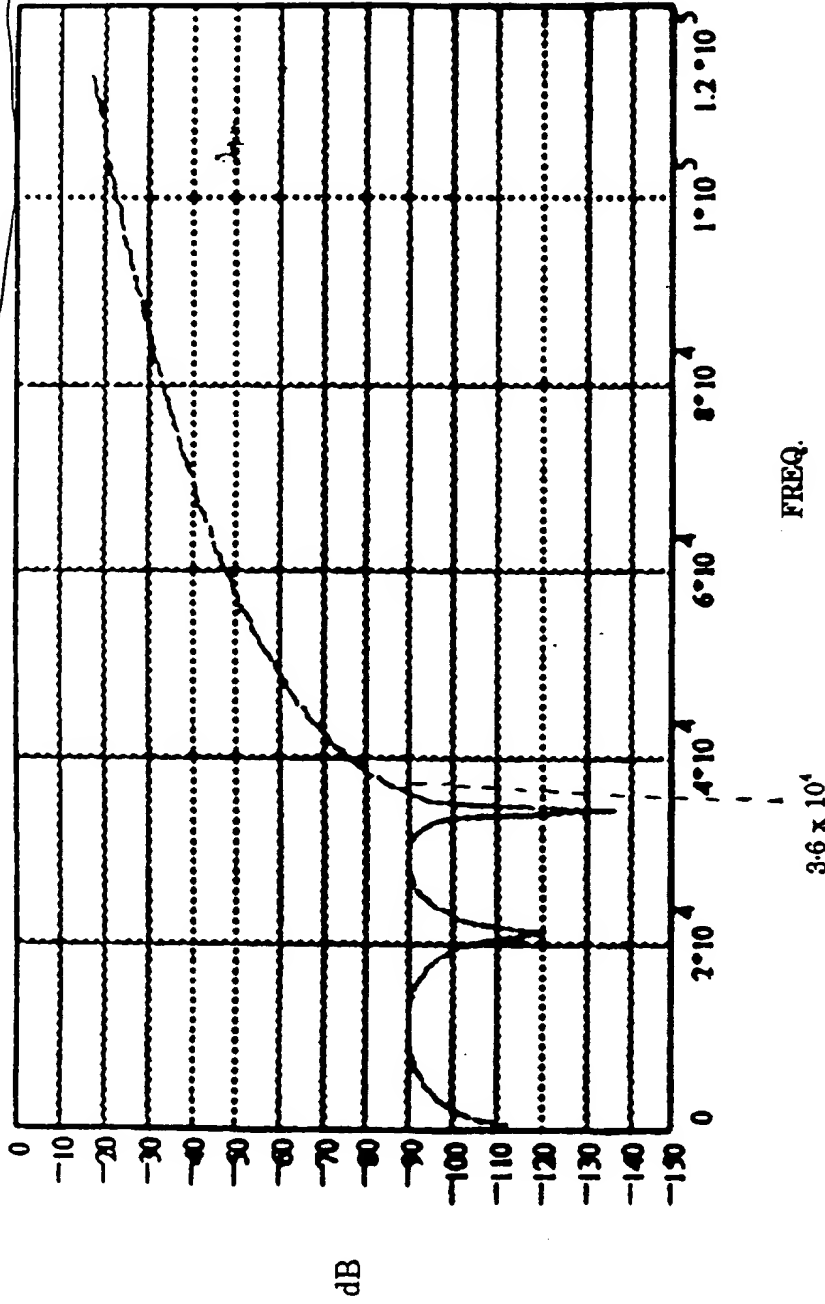
X = POLES

O = ZEROS

FIGURE 67

UNITED STATES PATENT AND TRADEMARK OFFICE
DEPARTMENT OF COMMERCE

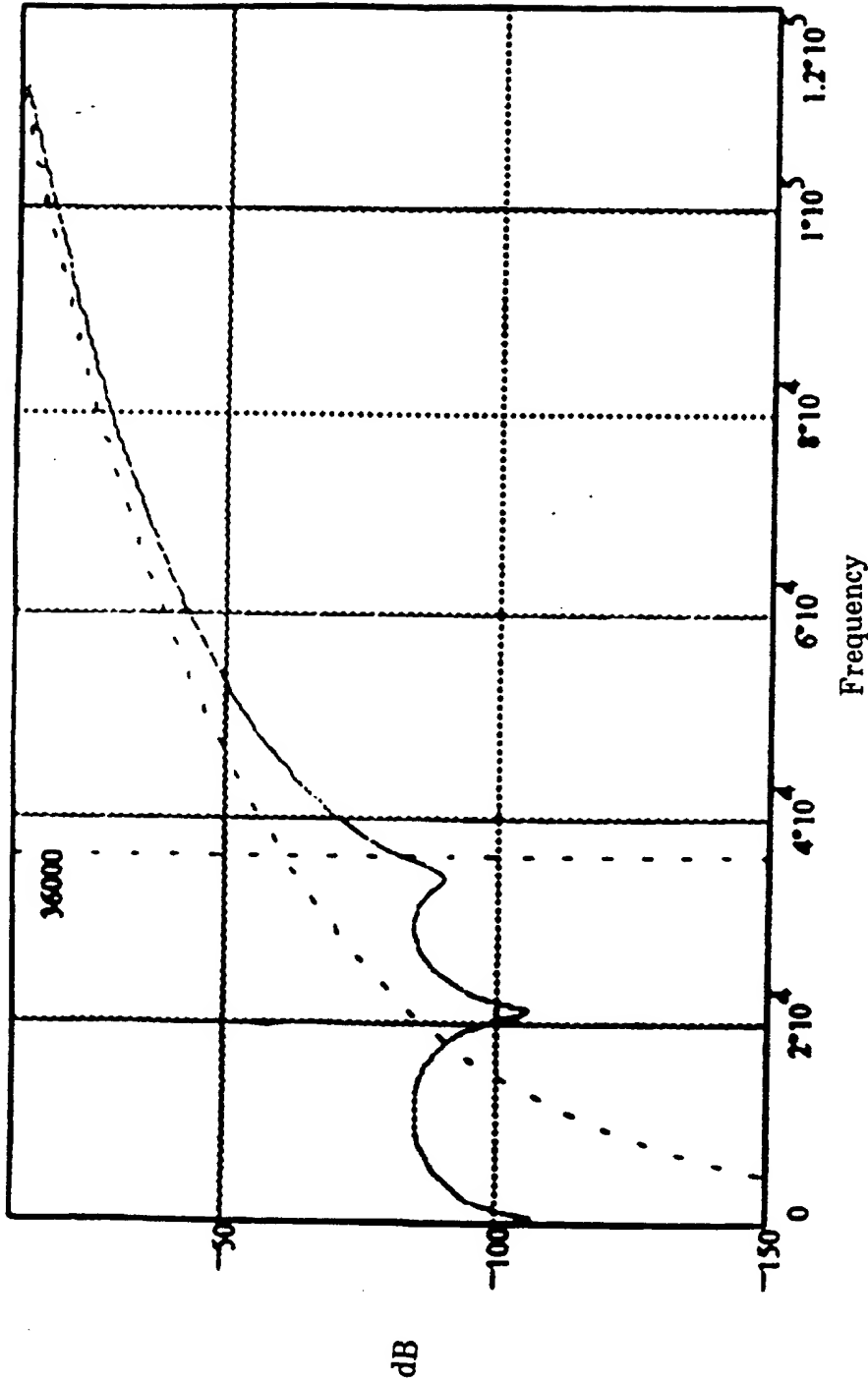
Transfer Function of discrete Filter (DIGITAL FREQUENCY DOMAIN)



($f_b = 48 \text{ KHZ}$)

FIGURE 68

NOISE TRANSFER FUNCTION MAGNITUDES



— Chebyshev zeros (realizable zeros in Fig. 26)
- - - all zeros at $z=1$

FIGURE 70

MAGNITUDE OF NOISE AND SIGNAL TRANSFER FUNCTIONS (IN dB)

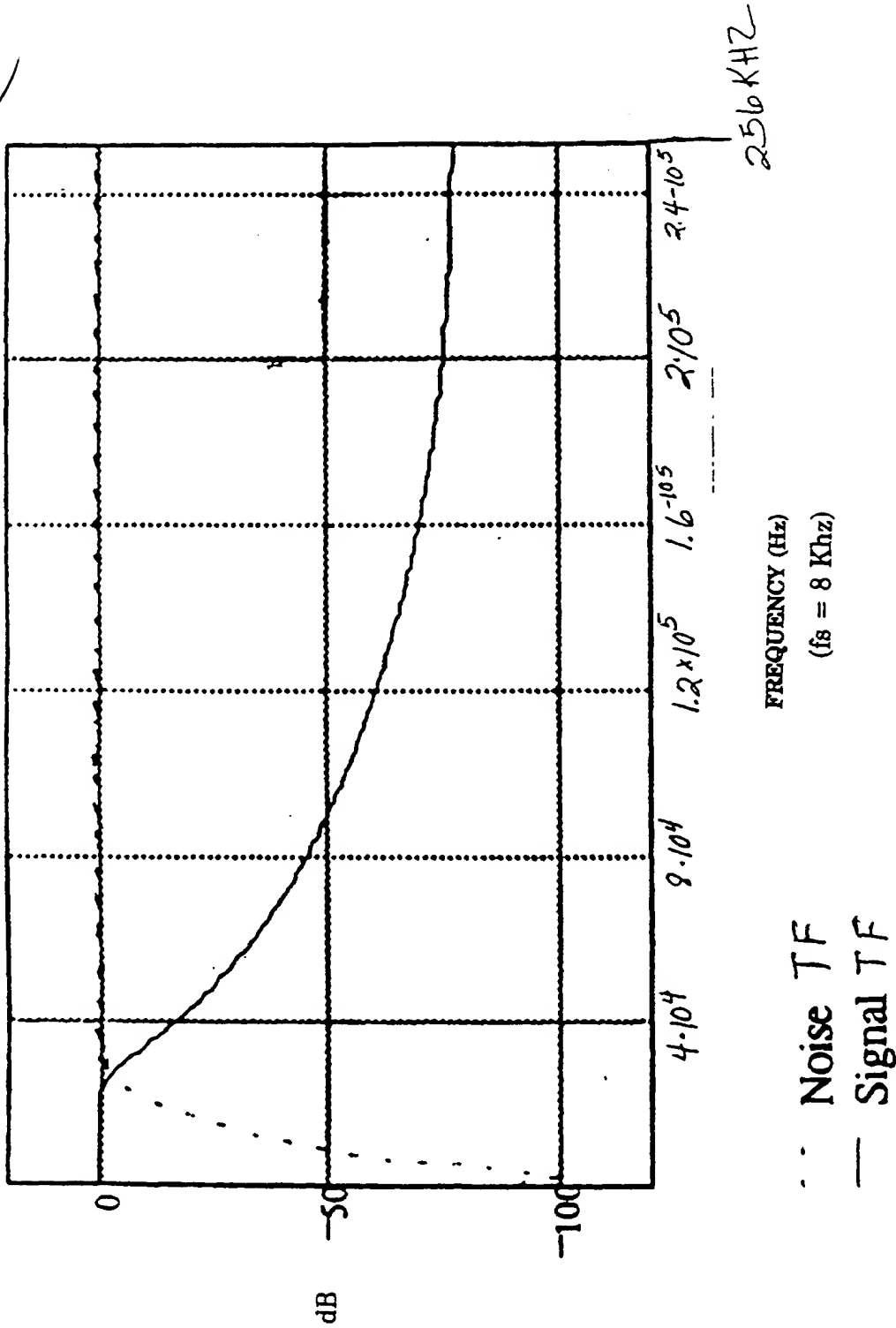
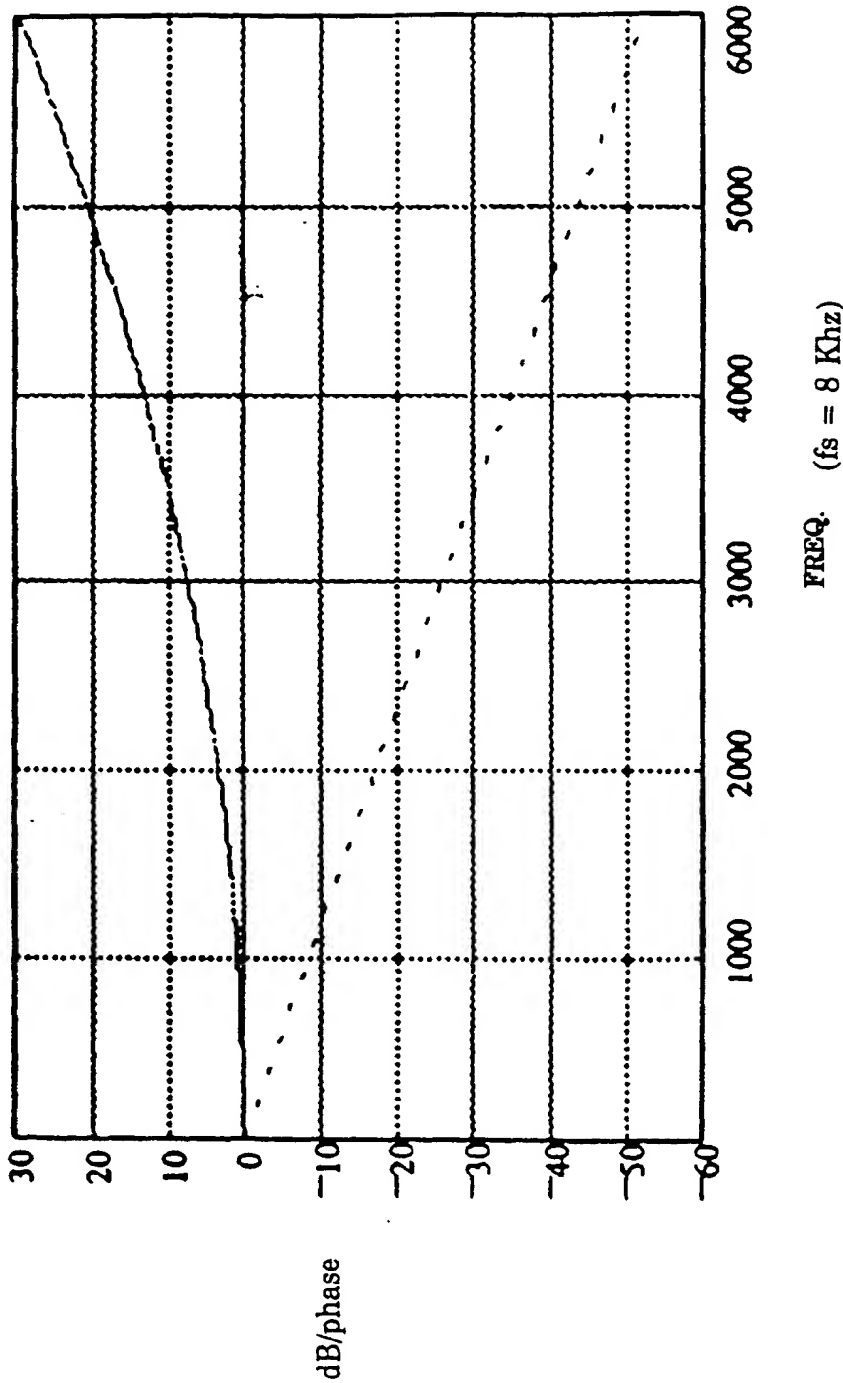


FIGURE 71

SIGNAL TF MAGNITUDE (X10³) AND PHASE (X10³) IN PASSBAND



— Magnitude * 1000 (dB)
- - Phase * 100 (rad)

FIGURE 72

Group Delay (sec)

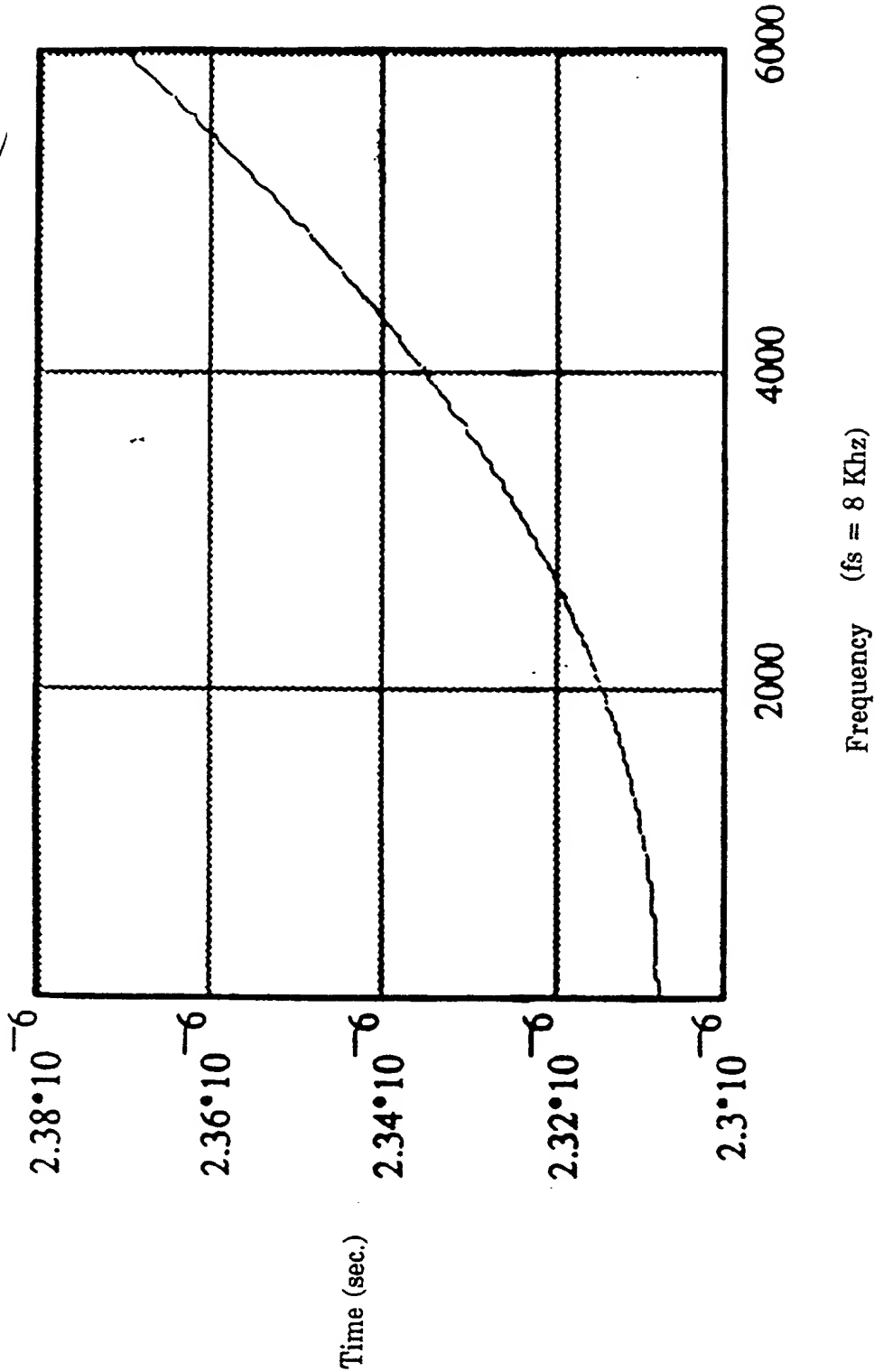


FIGURE 73

Constant Noise Gain Contours - K

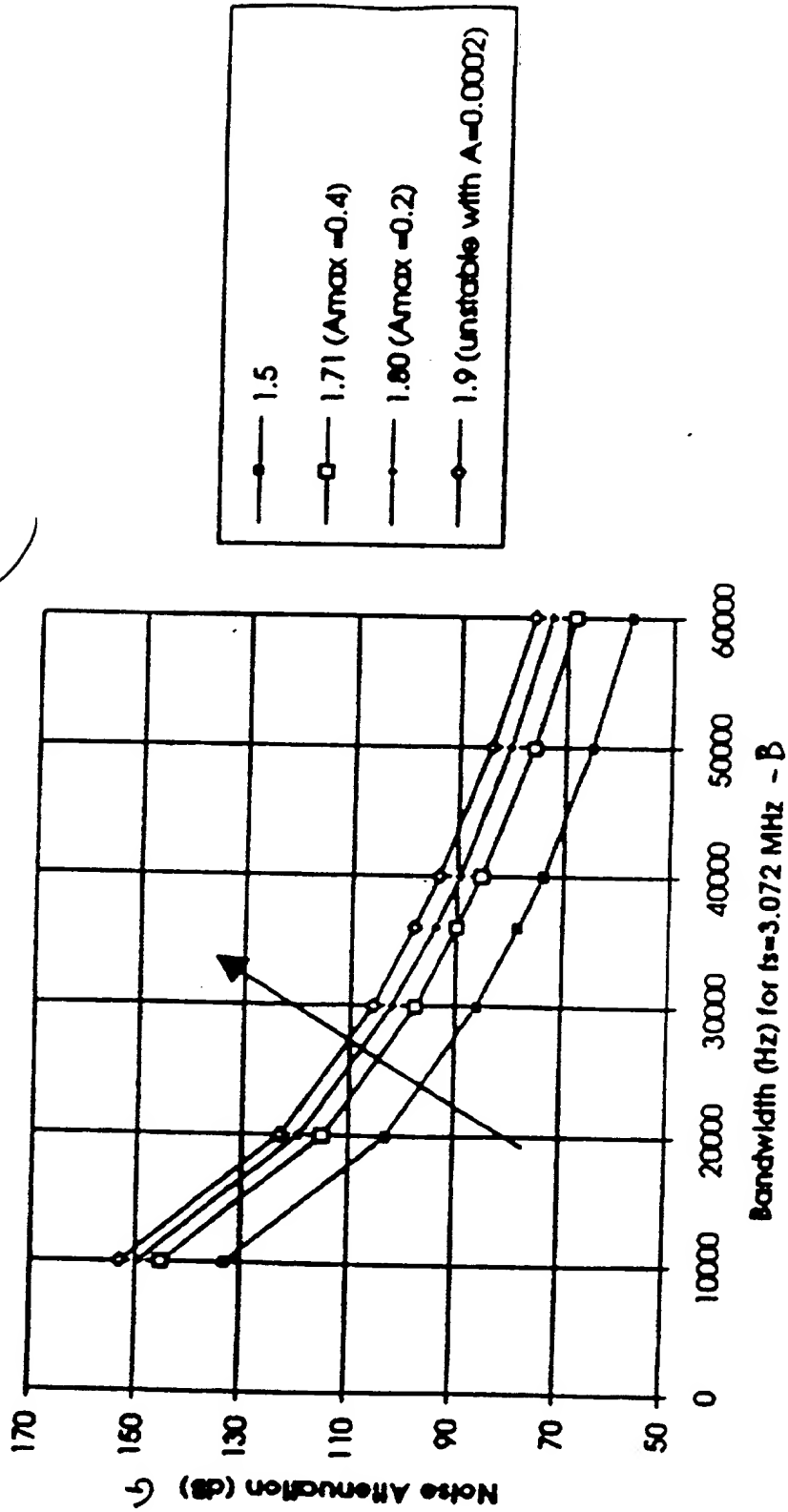


FIGURE 74

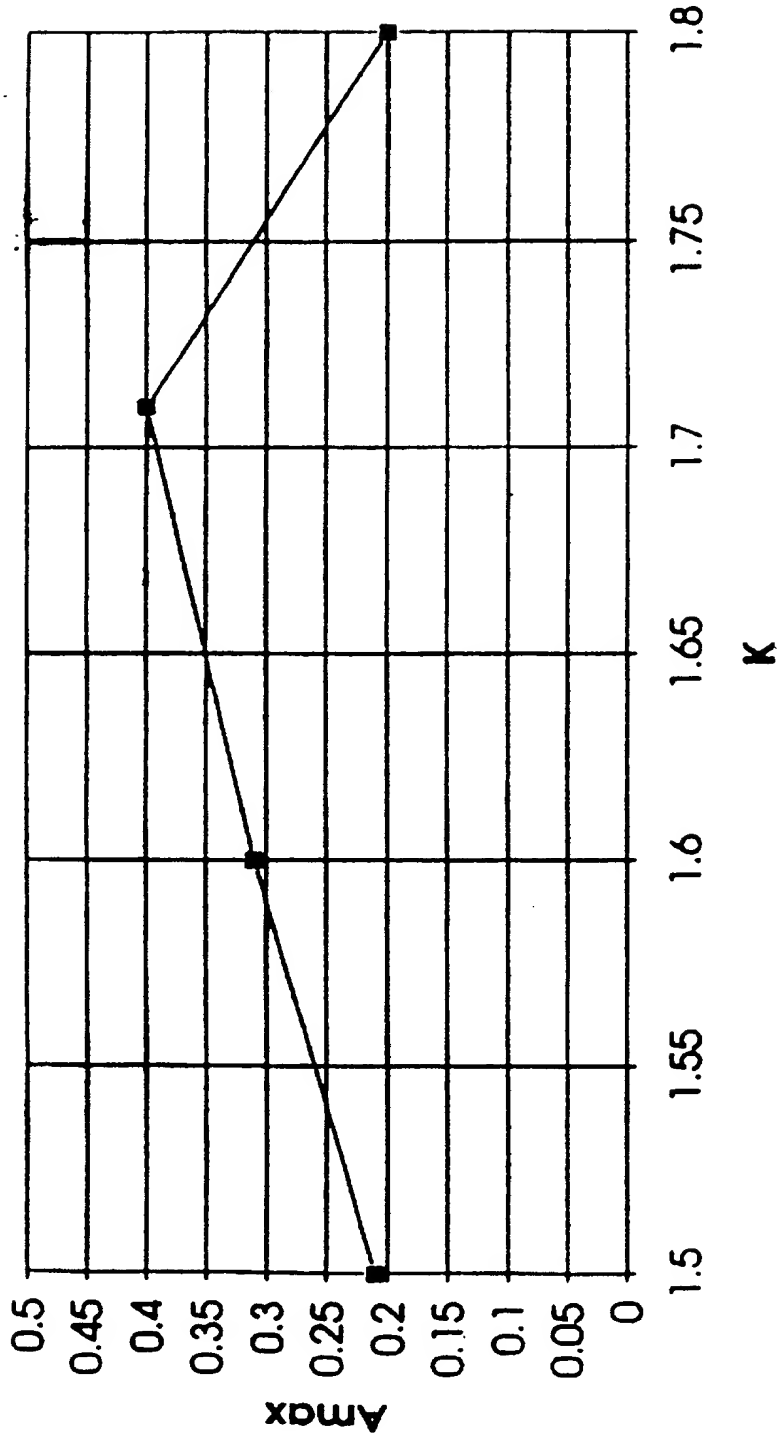


FIGURE 75

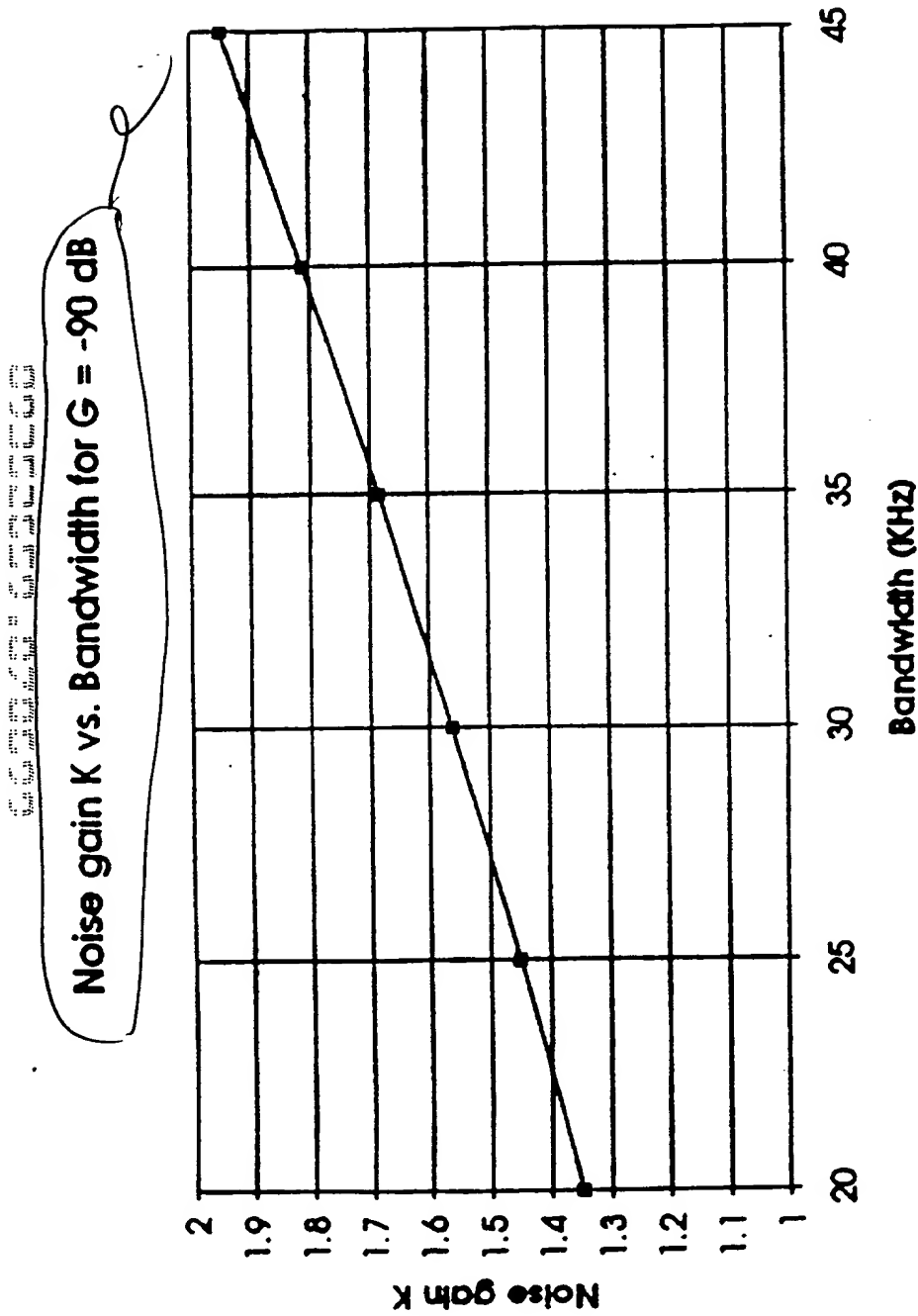


FIGURE 76

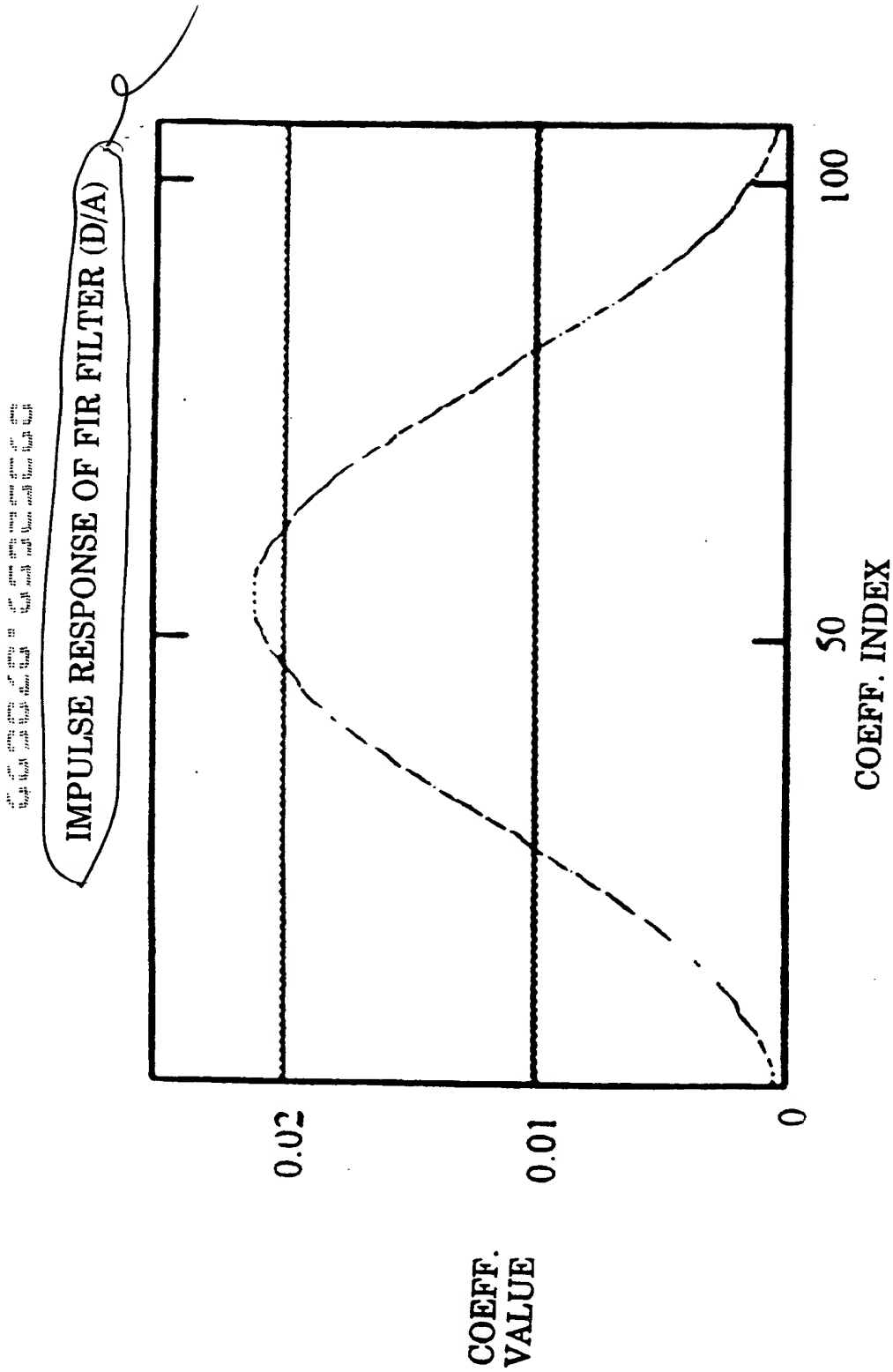


FIGURE 77

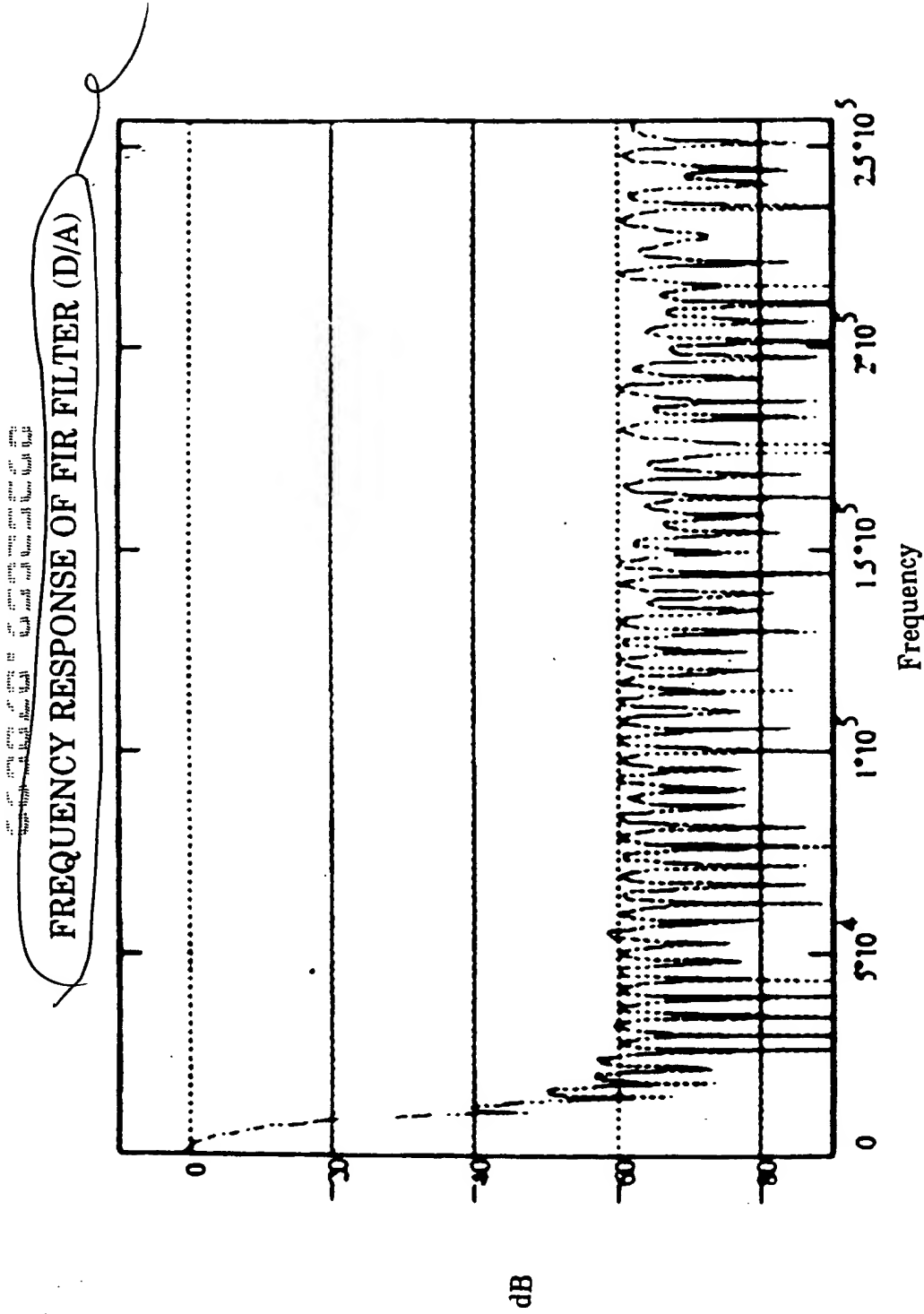
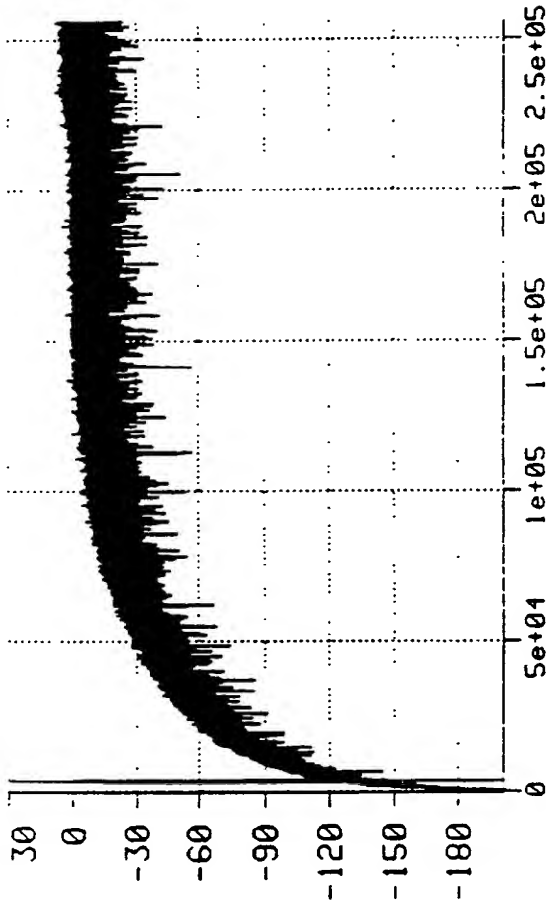


FIGURE 78

MODULATOR OUTPUT SPECTRUM--FULL RANGE

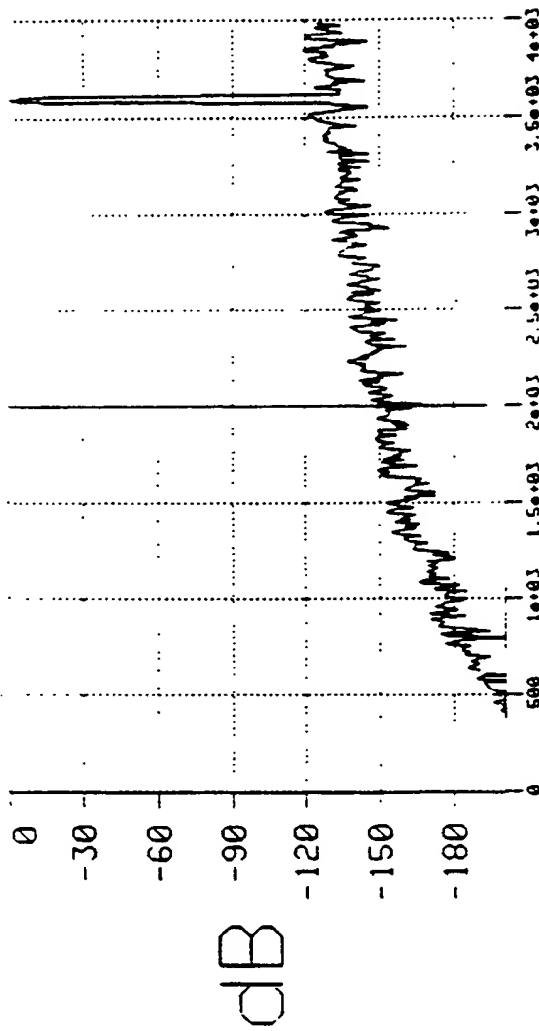


Point = 13229 of 65537
Freq. = 3601.56
dB = 0
Phase = -2.5257



FIGURE 84

MODULATOR OUTPUT SPECTRUM--DETAIL

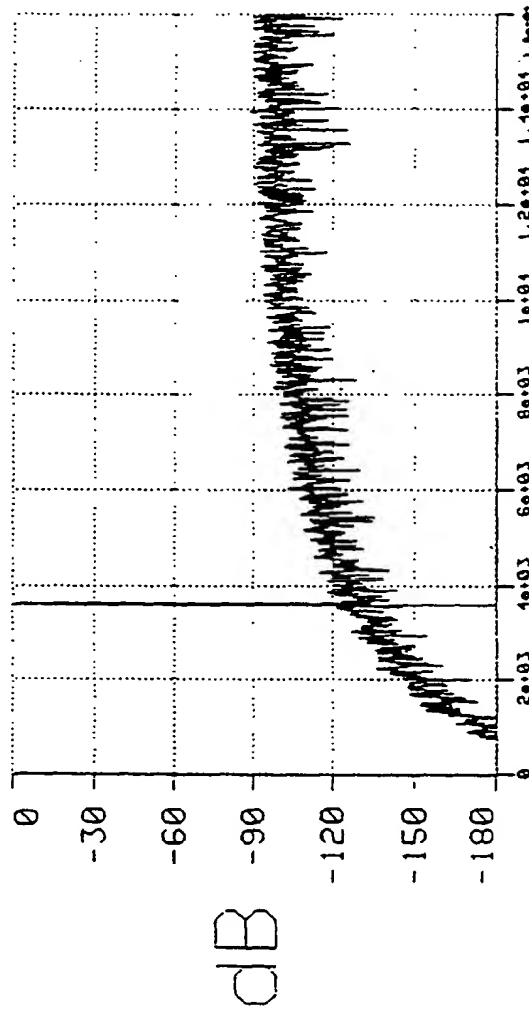


Point = 33025 of 65517
Freq. = 2007.81
dB = -147.494
Phase = -2.1843



FIGURE 85

SPECTRUM OF SINC ~ 6 DECIM.1 FILTER OUTPUT

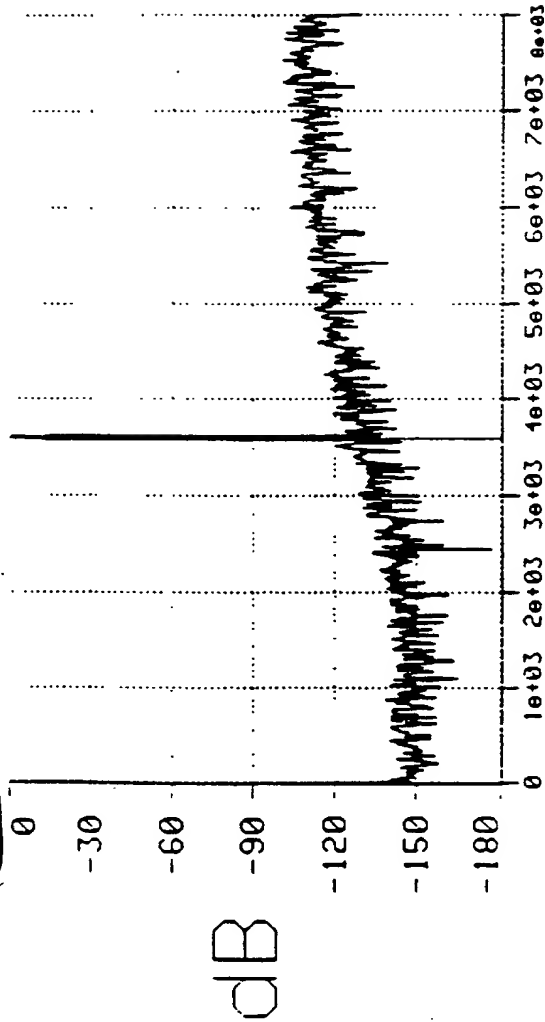


Point = 2509 of 1097
Freq. = 3601.56
dB = 0
Phase = 1.16017



FIGURE 86

SPECTRUM OF HALF-BAND DECIM.2 FILTER OUTPUT

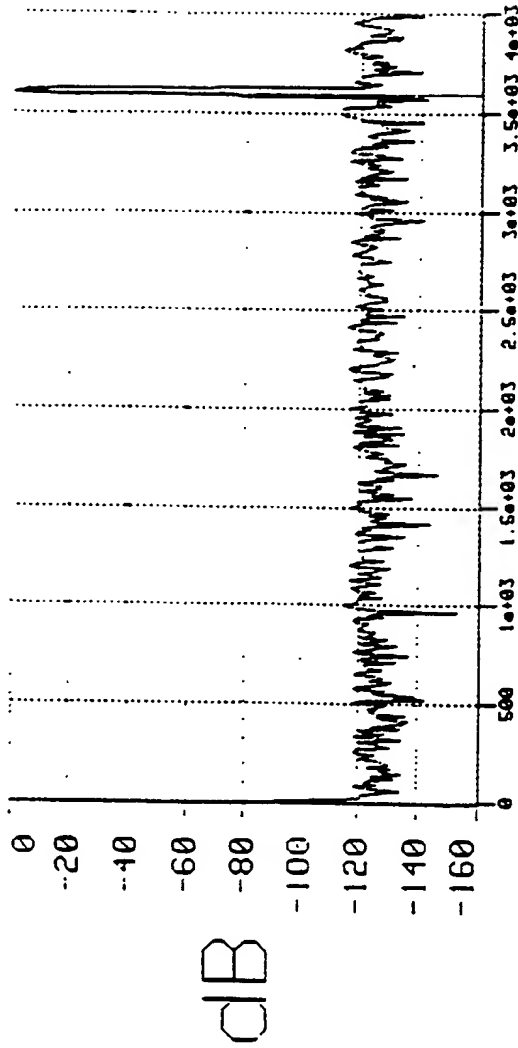


Point = 1485 of 2049
Freq. = 3601.56
dB = 0
Phase = -1.22977



FIGURE 87

SPECTRUM OF 16-BIT DECIM.3 FILTER OUTPUT



Point = 973 of 1025
freq. = 3601.56
dB = -1.77636E+15
Phase = -1.85564



FIGURE 88

Decim.2 Filter Frequency Response

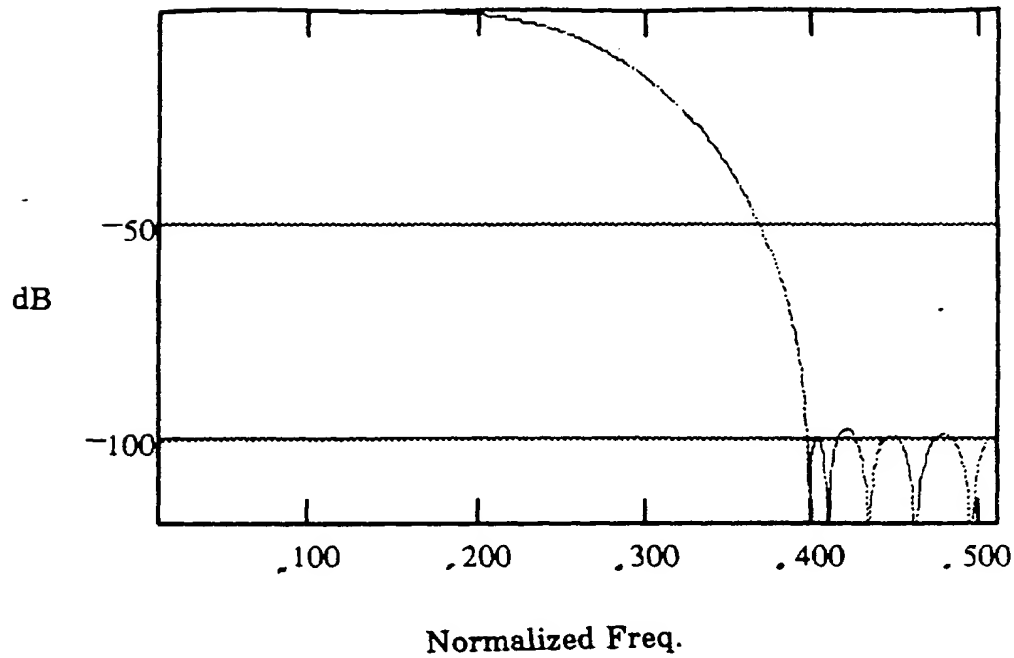


FIGURE 94

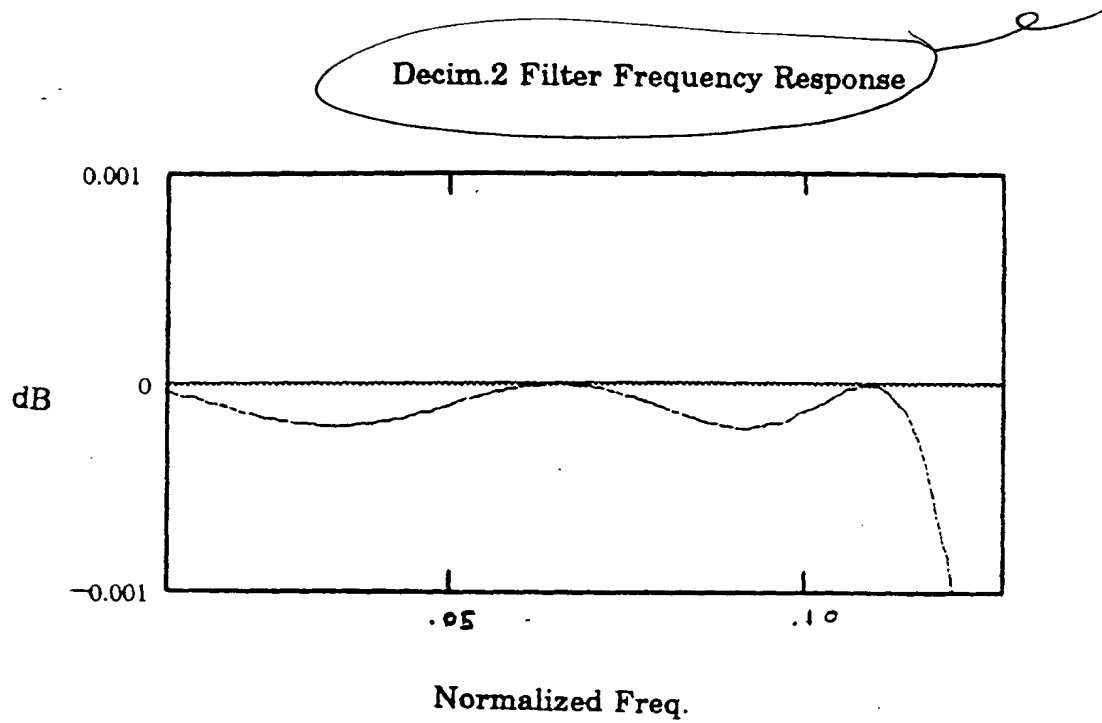


FIGURE 95

Decim.3 Filter Frequency Response

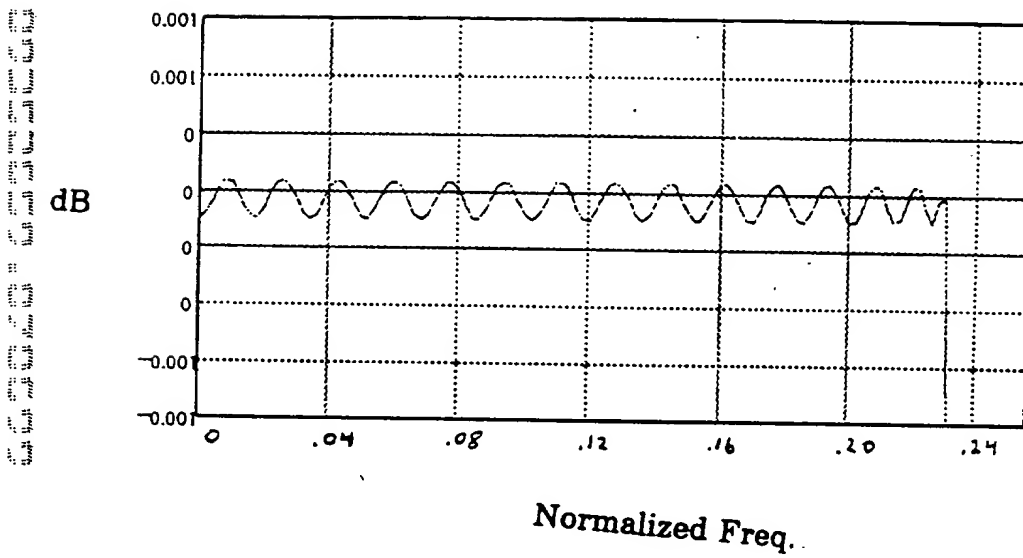


FIGURE 98

Compensator Freq. Response

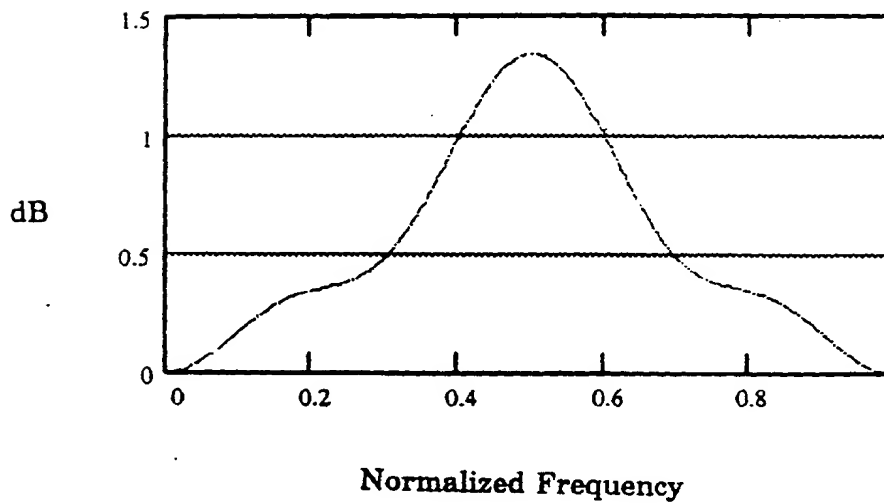


FIGURE 99

TOTAL FREQ. RESPONSE OF Decimator IN PASSBAND (UNCOMPENSATED)

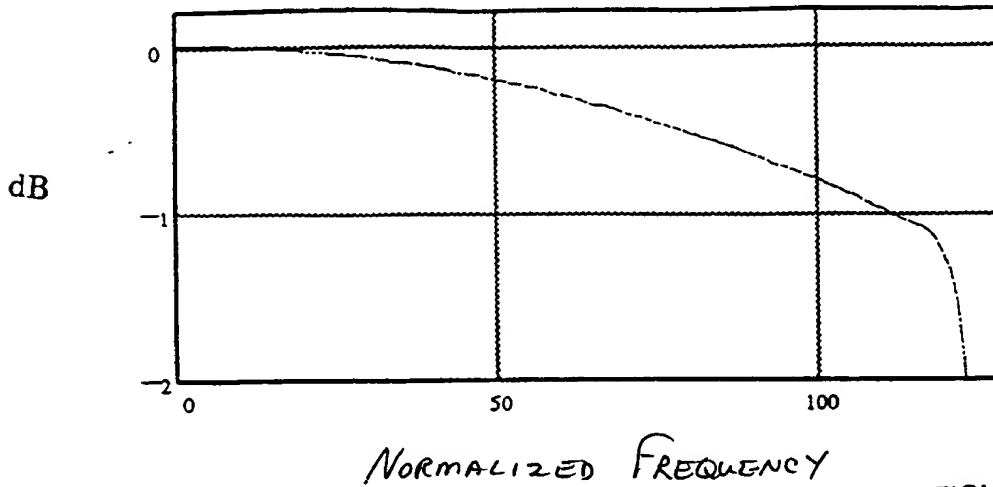


FIGURE 100

TOTAL FREQ. RESPONSE OF Decimator IN PASSBAND (COMPENSATED)

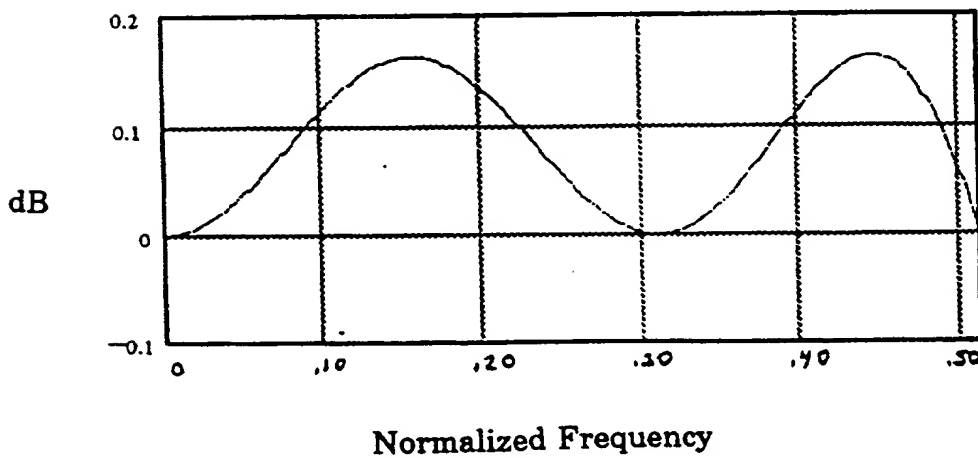


FIGURE 101

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☒ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.